

A redescription of *Ramanella marmorata* Rao, 1937 (Anura, Microhylidae)

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Ramanella marmorata Rao, 1937, hitherto known only from the syntypes collected over half a century ago from "Saklespur, Hassan District, Mysore", at present in Karnataka State (south-western India), that are now lost, is redescribed, based on a new specimen from Cotigao Wildlife Sanctuary (Goa, south-western India), and an older one from "Malabar" in the collection of the Museum of Comparative Zoology. The species is compared with congeneric species from southern India and Sri Lanka.

INTRODUCTION

The genus *Ramanella* was described by RAO and RAMANNA (1925), and named for the junior author, the type species (by monotypy) being *Ramanella symbiotica* Rao & Ramanna, 1925 (apparently a misprint for *Ramanella symbiotica*), a name considered a junior synonym of *Callula variegata* Stoliczka, 1872 by PARKER (1934: 93) and FROST (1985: 389). The genus, redefined by PARKER (1934), is restricted to peninsular India and Sri Lanka, and eight nominal species are currently recognized, five from India, two from Sri Lanka and one from both regions (see FROST, 1985: 389). Of these, perhaps the least known are three species from the Western Ghats of south-western India, *Ramanella anamalaiensis*, *Ramanella minor* and *Ramanella marmorata*, that are known only from the types described sixty years ago by RAO (1937) and then deposited in the Central College Museum in Bangalore. Since then, the whole collection of specimens described by RAO (1937) has been lost (see DUBOIS, 1984: 156-157). The present paper is devoted to one of these species, *R. marmorata*, the lost type specimens of which were stated to be from "Saklespur, Hassan District, Mysore" (currently spelt "Sakleshpur"; 12°59'N 75°43'E; at present in Karnataka State, south-western India).

When he prepared the original description of *Ramanella marmorata*, although the number of types was not specified, RAO (1937) clearly had several specimens of his new species, including "young specimens", "immature specimens", "mature males" and "mature females", but he presented measurements of a single specimen. As no holotype was desig-

nated in this original description, all these specimens must be considered syntypes of this species. RAO (1937: 420) stated that these specimens came from "whorls of the plantain leaves", and were usually found solitary, although occasionally two or three could be found together.

The purpose of this note is to report the rediscovery of *Ramanella marmorata*, based on material from Goa (India), a distance of over 300 km north-west of the type locality, and the discovery of an older specimen from "Malabar" in the collection of the Museum of Comparative Zoology (MCZ, Cambridge, USA). The species is redescribed and compared with the original description in RAO (1937).

One specimen (MCZ A.116283) was collected by the second author on 26-28 October 1994 from a forest rest house in Canacona (15°01'N 74°04'E), adjacent to Cotigao Wildlife Sanctuary (Goa, south-western India). This collection locality lies contiguous to a patch of wet evergreen forest, in a lowland situation. A second specimen (MCZ A.15421) was found in the MCZ collection with the locality "Malabar", which refers generally to the entire south-western highlands of India, also known as the Western Ghats.

MATERIAL AND METHODS

Measurements (to the nearest 0.1 mm) were taken with a Mitutoyo dial vernier calliper from specimens preserved in 70 % ethanol, over 12 months after collection in the case of MCZ A.116283. The following measurements were taken: SVL, snout-vent length (from tip of snout to vent); TBL, tibia length (distance between surface of knee and surface of heel, with both tibia and tarsus flexed); A-G, axilla to groin (distance between posterior edge of fore limb at its insertion to body and anterior edge of hindlimb at its insertion to body); HL, head length (distance between angle of jaws and snout-tip); HW, head width (measured at angle of jaws); HD, head depth (greatest transverse depth of head, taken at the orbital region); ED, eye diameter (diameter of orbit); UE, upper eyelid width (greatest width of upper eyelid); IO, interorbital distance (least distance between upper eyelids); IN, internarial distance (distance between nostrils); E-S, eye to snout-tip distance (distance between anteriormost point of eye and snout-tip); E-N, eye to nostril distance (distance between anteriormost point of eye and nostril); and F2D, diameter of the disk on finger II.

DESCRIPTION

A small *Ramanella* (SVL up to 29.6 mm); habitus robust; body ovoid, with a thick waist (fig. 1-2); head short (HL/SVL ratio 0.20-0.24), broad (HW/SVL ratio 0.30-0.33); snout obtuse when viewed dorsally, truncate in lateral view, in level with the mandible, nostrils closer to tip of snout than to eyes (E-N/E-S ratio 0.54-0.56); canthus rostralis sloping; loreal region oblique; eyes large (ED/HL ratio 0.47-0.49), eye diameter greater than eye-nostril diameter (ED/E-N ratio 1.45-1.53); interorbital distance over two-and-half times greater than upper eyelid width (IO/UE ratio 2.27-3.07); distinct occipital fold (fig. 3), pupil vertical; supratympanic fold distinct, extending from posterior corner of upper eyelid to insertion of forelimb at



Fig. 1. - *Ramanella marmorata* from Canacona, near Cotigao Wildlife Sanctuary, Goa, south-western India (MCZ A.116283) in dorsal (1.1) and ventral (1.2) views. Bars: 10 mm

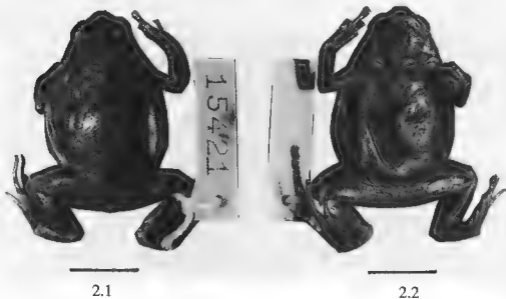


Fig. 2. - *Ramanella marmorata* from "Malabar", south-western India (MCZ A 15421) in dorsal (2.1) and ventral (2.2) views. Bars. 10 mm

Tab. 1. - Measurements (in mm) of *Ramanella marmorata* Rao, 1937 from south-western India (see text for details).

Measurements	MCZ A.15421	MCZ A.116283
Snout-vent length	29.6	25.9
Axilla-groin distance	13.4	11.0
Head length	5.9	6.2
Head width	9.0	8.6
Head depth	5.5	5.0
Eye diameter	2.9	2.9
Upper eyelid width	1.5	1.4
Interorbital distance	3.4	3.4
Internarial distance	1.8	2.4
Eye-snout-tip distance	3.7	3.4
Eye-nostril distance	2.0	1.9
Tibia length	11.7	10.8
Diameter of disk on finger II	1.2	1.2



Fig. 3. - Forehead of *Ramanella marmorata* (MCZ A.15421), showing the distinct occipital fold.

axilla; tympanum not externally visible, nostrils laterally oriented; inferior aspect of snout-tip smooth, without any nicks; inner margin of mandible with a distinct W-shaped notch; tongue large, smooth, without papillae, oval, measuring 6.2 mm in greatest length (in MCZ A.116283); post-choanal ridge well developed, with a broad median gap; cloacal opening directed posteriorly, slightly below the upper level of thighs.

Forelimbs long, the tips of fingers dilated into triangular, flattened disks, the largest on finger II (measuring 1.2 mm in both specimens examined), lacking webbing; two elongated metacarpal tubercles. Relative length of fingers: $3 > 4 > 2 > 1$. Hindlimbs relatively short; tibia short (TBL/SVL ratio 0.40-0.42); tibio-tarsal articulation failing to reach axilla; heels failing to overlap when the hindlimbs are set at right angles to the body; tips of toes weakly swollen, but not dilated; toe webbing vestigial, with three phalanges free on toe IV; a large elongated inner metatarsal tubercle and a smaller rounded outer metatarsal tubercle. Relative length of toes: $4 > 3 > 5 > 2 > 1$. Measurements are given in tab. 1.

Skin with large, flattened pustules scattered throughout the dorsum, ventrum smooth.

In preservative, dorsum of MCZ A.116283 pale olive with dark brown bands behind the internarial, the interorbital and over the scapular region. Scattered dark brown blotches present on the rest of the dorsum; fore- and hindlimbs dark-banded, the most distinctive bars being on the inguinal region, which is joined through the thighs to across the cloaca. Venter pale yellow, variegated with dark brown on the throat, chest, abdomen and the undersurfaces of the fore- and hindlimbs. MCZ A.15421 is relatively more discoloured, but shows the dark blotches on the dorsum and the limb bands; the dark bands on the dorsum are broken up.

COMPARISONS

The present material matches the original description and illustrations of *Ramanella marmorata* by RAO (1937: 419-420, pl. 29 fig 19-19a) in the following characters: well developed post-choanal ridges, with a broad median gap; toes webbing weak; dorsum with dark blotches, in addition to dark bands behind the internarial, interorbital and scapular regions; dark banded thighs that are fused, running along the thighs over the cloaca and up the inguinal region. The specimen (sex unspecified) measured by RAO (1937: 419-420) was 25.0 mm in snout-vent length, while the two specimens being reported here (both females) measure 25.9 mm (MCZ A.116283) and 29.6 mm (MCZ A.15421).

However, the two new specimens do not fit the original description of RAO (1937) in a couple of apparently fundamental characteristics. Both specimens show a distinct occipital fold (see fig. 3), which was reported absent in RAO's specimens, and they show a conspicuous supratympanic fold, described as "inconspicuous" by RAO (1937). Since the new locality (in Goa) is over 300 km from the type locality, such variation is not remarkable. In addition, many of RAO's (1937) types were clearly desiccated specimens, which may account for the damage to dermal features. In *Ramanella montana* (Jerdon, 1854), *Ramanella obscura* (Günther, 1864), *Ramanella variegata* (Stoliczka, 1872) and *Ramanella triangularis* (Günther, 1876), the occipital fold is occasionally absent (see PARKER, 1934).

Ranunella marmorata differs from all its congeners in coloration. Its small, dark blotches and transverse bands contrast with the dark, median, hour-glass figure of *R. montana*, *R. obscura*, *R. palmata* and *R. triangularis*, with the broad median, dark band of *R. anamalaiensis*, and with the broad, dark triangle on the anterior part of the dorsum of *R. minor*. *R. marmorata* also differs from *R. obscura*, *R. palmata*, *R. triangularis* and *R. variegata* in having the eye-snout distance greater than the diameter of the eye (vs. eye-snout equal to or less than eye diameter in its congeners), well-developed post-choanal ridges (indistinct or absent in *R. anamalaiensis* and *R. variegata*) and toes weakly webbed (vs. free in *R. anamalaiensis* and *R. minor*, webbing on toe IV reaching the basal subarticular tubercle as a broad sheath and continuing as a narrow sheath to the base of the swollen tips in *R. montana*, and up the distal subarticular tubercle in *R. palmata*). *R. marmorata* differs from *R. minor* in showing internarial distance greater than the upper eyelid width (vs. equal). It also differs from *R. montana* in showing a broad median gap between the post-choanal ridges (vs. ridges nearly in contact) and free fingers (vs. fingers distinctly webbed, fide PARKER, 1934) and from *R. obscura* in having a supratympanic fold thin (vs. with a parotoid-like thickening).

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